TIPS FROM THE OTHER SIDE OF THE PEER-REVIEW PROCESS TO GET YOUR SCIENTIFIC MANUSCRIPT PUBLISHED - PART II

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Atlanta, Georgia USA (Claudia Nance Rollins Bldg room CNR-5001)
Thursdays at noon, 18 April 2024 (Part I), 25 April 2024 (Part II)

OUTLINE – *Tips to Publish Your Manuscript*

Part I (18 April 2024)
- ✓ Do Good Science
- ✓ Select and Follow Structure
- ✓ Create an Outline
- ✓ Adhere to Journal Instructions
- ✓ Tables that Explain Fully

Part II (25 April 2024)
6. Figures that Explain Fully
7. Compose Text for Logical Flow
8. Write Abstract Last !
9. Be Honest, Show Integrity
10. Ease Reviewers' Burden

Digression: Color Coding in These Lectures

Conventions for indicating Good and Bad Examples

Color codes in these lectures (light background:
"Praise" in blue — sample
"Criticism" in red — sample

Color codes in these lectures (dark background):
"Praise" in cyan — sample
"Criticism" in pink — sample

Graphs - *Principles*

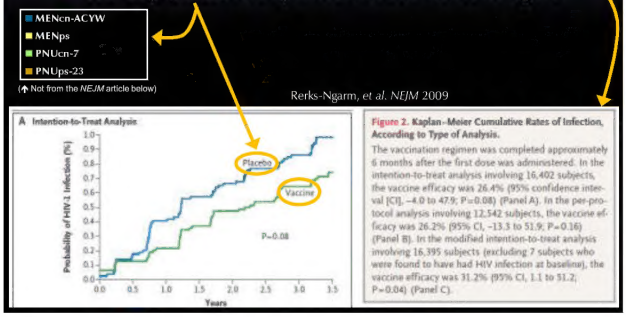
- Appropriateness:
  - Show data visually that is not easily understandable in text or table
    - E.g., patterns, trends, aberrations, similarities, and differences in data.
    - Better remembered by readers and audience
- Efficiency:
  - Use titles, legends, and footnotes that explain the content
  - Convey maximum data using minimal ink
- Independence:
  - Figure and its legend should stand by itself without reference to text
  - Reviewers may read only abstract and jump to the Tables and Figures, the "meat" of your Results

Graphs - 2 *Principles*

- Visual Display
  - Avoid unnecessary information
  - Minimize wasted blank (white) space
  - Provide both high and low sampling error bars, if relevant
- Legibility
  - Font sizes and series colors are large enough to read in print without a magnifying glass
    - Software-generated labels are usually illegible; remove or cover and replace
    - Use empty space to enlarge stingy font sizes, data points, and and colors for different series
- Simplicity
  - Avoid 3-dimensional tables

Graphs – 3 *Legends*

- Caveat: two common uses of term "legend"
  - The explanatory text that accompanies the figure
  - The key (code) to explain colors or icons in figure



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Graphs - 4 *Legends*

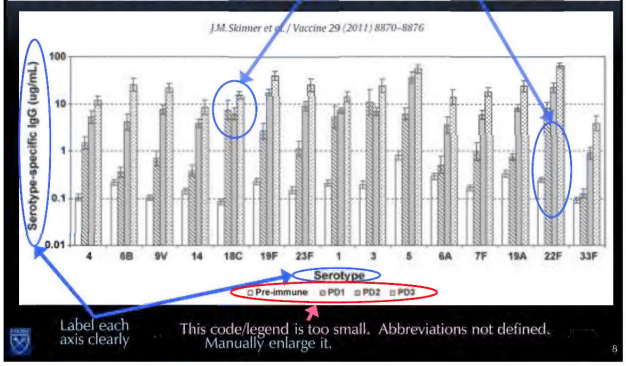
- Title legends should:
  - Indicate clearly number of subjects (mice or persons) in each study arm (investigational or control)
  - Define nature of high-low sampling error bars
    - 95% C.L., SEM (standard Error of mean), SD (standard deviation)
    - In general, avoid SD as it does not reflect sample size

Graphs - 5

Complete explanation, but not for abbreviations

Identify and show both high-low sampling error bars

Bar shadings that work in black-white. No solid blacks to hide lower error bar



Label each axis clearly

This code/legend is too small. Abbreviations not defined. Manually enlarge it.

Graphs – 6 *Dots*

- ***Dot plots*** preferable to bar graphs
- Dots show sample size and skewness
  - Such info is hidden by bar graphs showing only means
- Horizontal bars can show
  - Central tendency (e.g., mean)
  - High-low sampling error (not shown here)
- Can "jitter" dots symmetrically to the sides to see all data points

Data point icons defined

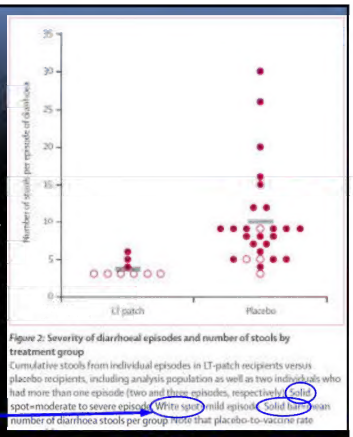
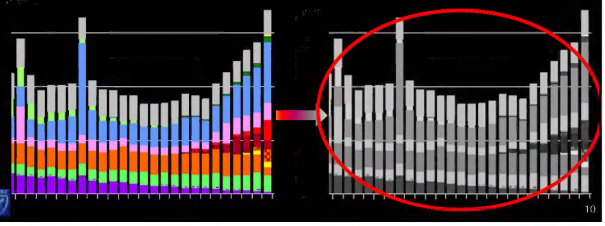


Figure 2: Severity of diarrhoeal episodes and number of stools by treatment group
Cumulative stools from individual episodes in LT-patch recipients versus placebo recipients, including analysis population as well as two individuals who had more than one episode (two and three episodes, respectively). Solid spot=moderate to severe episode; White spot=mild episode; Solid bar=mean number of diarrhoea stools per group. Note that placebo-to-vaccine rate

Frech SA, et al. Use of a patch containing heat-labile toxin from Escherichia coli against travellers' diarrhoea: a phase II, randomised, double-blind, placebo-controlled field trial. Lancet 2008;371(9629):2019-2025.

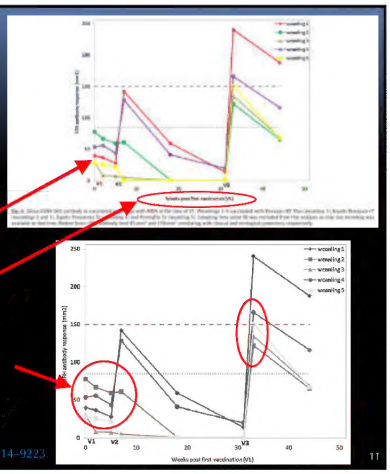
Graphs - 7
Do not rely on color alone

- Data points, lines, and shapes may not be distinguishable in grayscale printouts
- Consider readers without color printers; color blind
- Ensure groups and series are distinguishable even when output on black-white-grayscale printers



Graphs - 8
Do not rely on color only

- Bad Example
  - Data-point icons too small to distinguish
  - X-axis text too small
  - All-solid series lines indistinguishable in grayscale



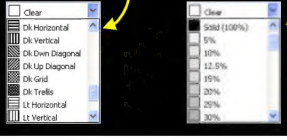
Gildea S, et al. Vaccine 2011;29:9214–9223

Graphs - 9
Do not rely on color alone

- Use more than color for data
  - Data points: use various shapes and symbols

  - Data lines: use dotting patterns

  - Data shapes: use crosshatchings or shadings



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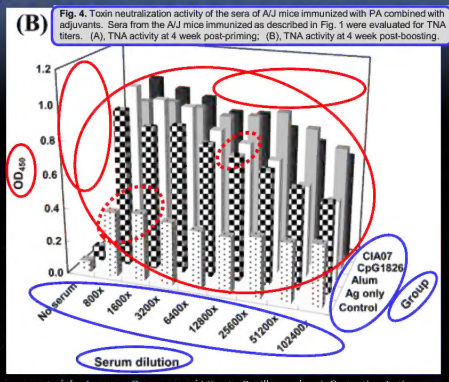
Graphs - 10 *Beware/Avoid 3D Charts*

- Good
  - Title
  - X & Z axis labels
- Bad
  - Y axis label not well described
  - Missing grid lines
  - Even with grid lines, cannot discern relative values
  - Bars in rear can be hidden



Kim SH, et al. Enhancement of the Immune Responses of Mice to *Bacillus anthracis* Protective Antigen by CIA07 Combined with Alum. *Arch Pharm Res Vol 31, No 11, 1385-1392, 2008*

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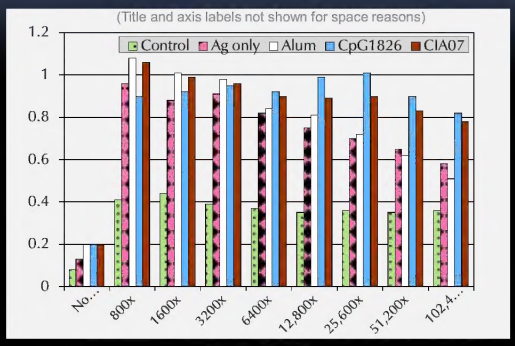
Graphs - 11
Improve prior bad example with same data



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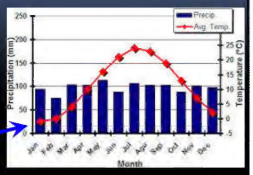
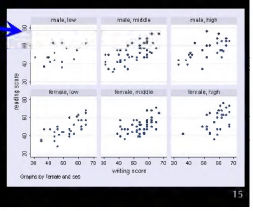
Graphs - 12 *Combining different data types*

- Pros
  - Show relationships between data
  - Efficient use of space
- Two "Good" examples
  - Multiple series on same plot
    - Common, but needs careful labelling
  - Separate adjacent plots
    - Data should be related; share same axis(es), legend, and scale
    - Cons
      - Do not use to circumvent journal limits on total number of figures
      - May be too wide or too tall to fit journal columns





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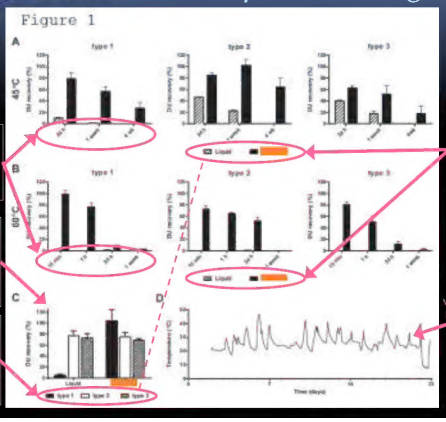
Graphs - 13 *Bad example combining data*



Different x-axis scales of vertically-aligned graphs !

Graphs C & D unrelated to A and B stacked above !

Change of color/fill codes between A-B and C-D !

Redundant repetition of same series of color/fill codes

Temperature variation during thermostability testing unrelated to other graphs

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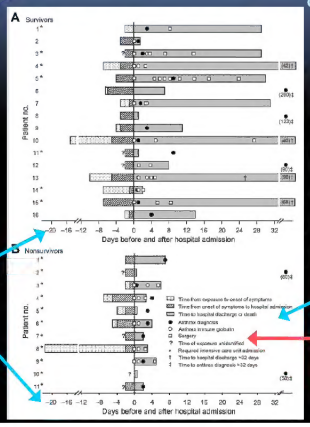
Graphs - 14 *Creative combined graphs*

Source: Booth, *et al.* Confirmed *Bacillus anthracis* infection among persons who inject drugs, Scotland, 2009–2010. Emerg Inf Dis 2014:20(9):1432-62



Graphs A and B share same x axis time scale

Use empty space to provide symbol and shading codes

Boxes, symbols, and text too small

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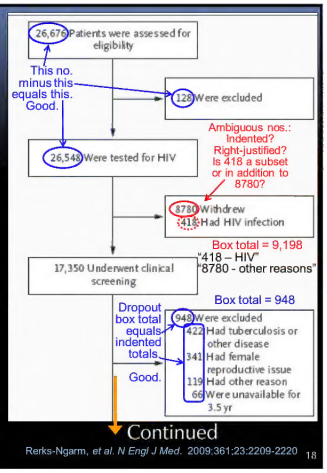
Graphs/Figures
Flow Charts

- Flow Charts shows counts and outcome of subjects
  - Top = numbers recruited
  - Downward flow = remained for analysis
  - Dead-end boxes to side = dropped out
- Keep track of subjects like a bank does your money
  - Where did every $ and ¢ent go?
  - Bad arithmetic raises suspicion of flawed work or hiding subjects
- Flow chart usually in Results
  - Some describe the flow of study participants (humans, mice) in Methods


26,676 Patients were assessed for eligibility
This no. minus this equals this. Good.
128 Were excluded
Ambiguous nos.: Indented? Right-justified? Is 418 a subset or in addition to 8780?
26,548 Were tested for HIV
8780 Withdrew
418 Had HIV infection
Box total = 9,198
"418 – HIV"
"8780 - other reasons"
17,350 Underwent clinical screening
Box total = 948
Dropout box total equals indented totals.
948 Were excluded
422 Had tuberculosis or other disease
341 Had female reproductive issue
119 Had other reason
66 Were unavailable for 3.5 yr
Good.
Continued

Rerks-Ngarm, *et al. N Engl J Med.* 2009;361:23:2209-2220

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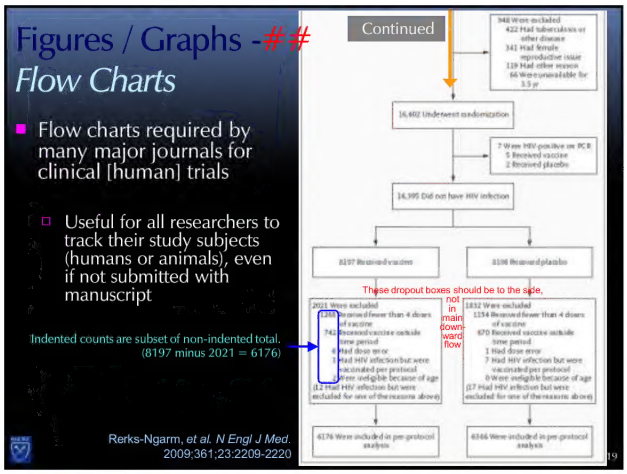
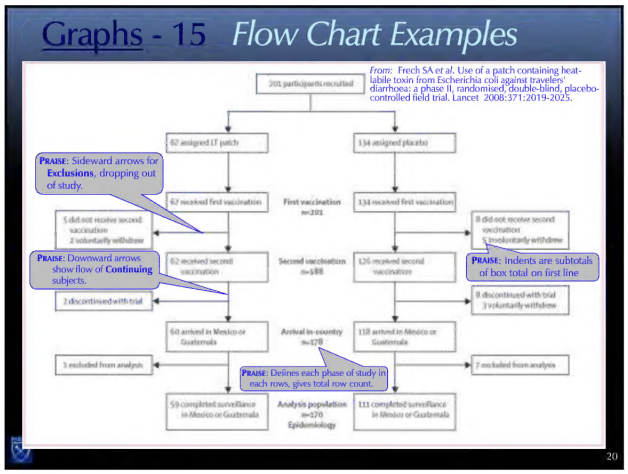
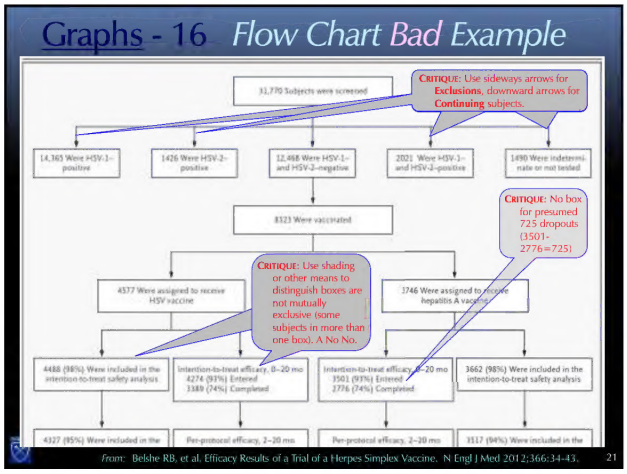
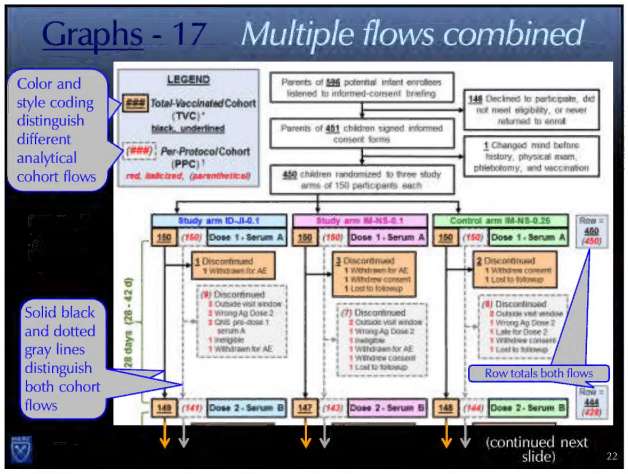
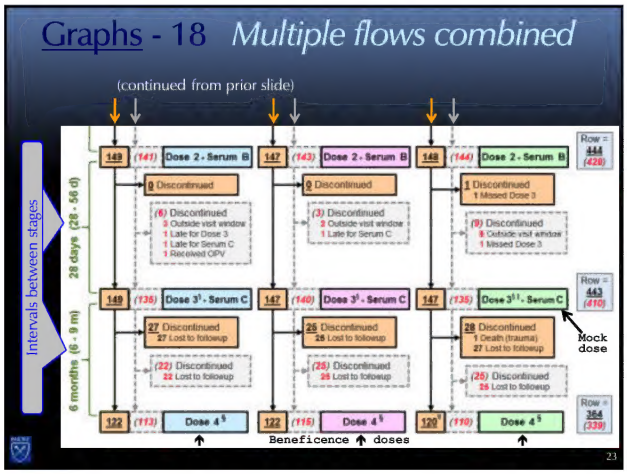
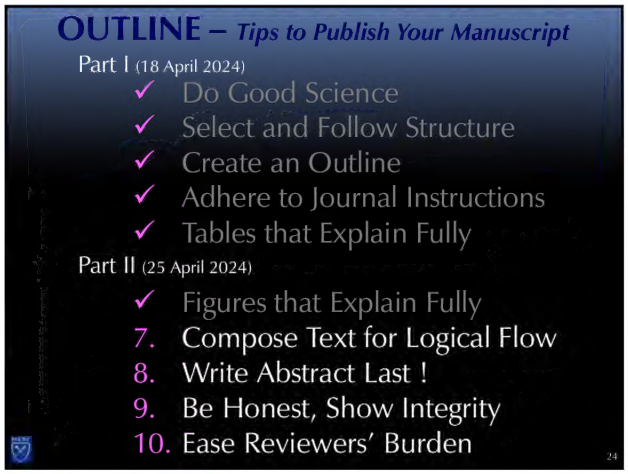

Figures / Graphs -##
Flow Charts
Flow charts required by many major journals for clinical [human] trials
Useful for all researchers to track their study subjects (humans or animals), even if not submitted with manuscript
Indented counts are subset of non-indented total. (8197 minus 2021 = 6176)
Continued
These dropout boxes should be to the side, not in main downward flow
Rerks-Ngarm, et al. N Engl J Med. 2009;361;23:2209-2220
19


Graphs - 15 Flow Chart Examples
From: Frech SA et al. Use of a patch containing heat-labile toxin from Escherichia coli against travelers' diarrhoea: a phase II, randomised, double-blind, placebo-controlled field trial. Lancet 2008;371:2019-2025.
PRAISE: Sideward arrows for Exclusions, dropping out of study.
PRAISE: Downward arrows show flow of Continuing subjects.
PRAISE: Indents are subtotals of box total on first line
PRAISE: Defines each phase of study in each rows, gives total row count.
20


Graphs - 16 Flow Chart Bad Example
CRITIQUE: Use sideways arrows for Exclusions, downward arrows for Continuing subjects.
CRITIQUE: No box for presumed 725 dropouts (3501-2776=725)
CRITIQUE: Use shading or other means to distinguish boxes are not mutually exclusive (some subjects in more than one box). A No No.
From: Belshe RB, et al. Efficacy Results of a Trial of a Herpes Simplex Vaccine. N Engl J Med 2011;366:34-43.
21


Graphs - 17 Multiple flows combined
Color and style coding distinguish different analytical cohort flows
Solid black and dotted gray lines distinguish both cohort flows
LEGEND
Row totals both flows
(continued next slide)
22

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Writing for Flow
Don't worry about the English

- Difficult language
  - Spelling does not indicate pronunciation
    - Cough = "...off" Rough = "...uff" Bough = "...ow"
  - Many ways to express same idea
  - Many idioms, thanks to Shakespeare
    - *"a sea change", "all of a sudden", "mum's the word", "break the ice", "in a pickle", "much ado about nothing",* "long in the tooth"
- This past editor did not expect perfect English from non-native-English speaking authors
  - As long as the meaning is expressed, somehow
  - Find a native-English speaker with science background to help edit your manuscript
    - Online services available, but not free

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Writing for Flow - 2
Principles of Gopen & Swan

- George D. Gopen (Duke), Judith A. Swan (Princeton)
  - Recognized the science of writing
  - "Use Key Terms" and "Write for Flow"

The Science of Scientific Writing

If the reader is to grasp what the writer means, the writer must understand what the reader needs

Writing with the Reader in Mind: Expectation and Context

***I**nformation is interpreted more easily and more uniformly if it is placed where most readers expect to find it.*

***B**eginning with the exciting material and ending with a lack of luster often leaves us disappointed and destroys our sense of momentum.*

http://www-stat.wharton.upenn.edu/~buja/sci.html

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Writing for Flow - 3
"Topic" positions and "stress" positions

- At beginning of sentence = "topic position"
  - Places the person or thing whose "story" you are telling
  - Already known and familiar Old Information
  - Usually the grammatical "subject" of the sentence
  - Provides the important link to prior sentences
- At end of sentence = "stress position"
  - Place the New Information you want the reader to learn
  - This provides the important link to future sentences

Acknowledgment : Robert M. Jacobson, Mayo Clinic, "Writing a First Draft"

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Writing for Flow - 4
Linking old information to new

- Sentence should begin (*topic position*) with *Old Information*
  - Key word(s) usually introduced in a prior sentence (or title)
  - Readers already familiar with it
- Sentence provides key word(s) of *New Information* at its *stress position* at or near end of sentence
- Next or later nearby sentence:
  - The same *New Information* now becomes the *Old Information*

1. *Old Info.* → *New Info.*
2. *Next/later sentence* *Old Info.* → *New Info.*
3. *Next/later sentence* *Old Info.* → *New Info.*

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Writing for Flow - 5
Good and bad examples

- Sample sentence:
  - "When key regulatory pathways that control cell proliferation are subverted, genes with latent transforming potential (proto-oncogenes) can become oncogenes."
  - Good next sentence:
    - "These proto-oncogenes are activated by subfamilies of G-protein-coupled receptors, such as serotonin and muscarinic cholinergic receptors."
  - Bad next sentence:
    - "Several subfamilies of G-protein-coupled receptors, such as serotonin and muscarinic cholinergic receptors, can activate these proto-oncogenes"

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Writing for Flow - 6
Linking paragraphs

- Begin paragraphs with a ***topic sentence***
  - Provides overview of what paragraph or next sentences will cover, e.g.:
    - "Prevention programs for AIDS involve a number of interacting components, including … ."
    - "A complex of proteins mediate transcriptional silencing at selected regions of the yeast genome."
  - Topic sentences provide linkages …
    - To "old info" in preceding paragraph, if not in last sentence of that paragraph
    - To upcoming sentences in paragraph to help reader anticipate what is coming

Acknowledgment : Robert M. Jacobson, Mayo Clinic, "Writing a First Draft"

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Writing for Flow – 7
1. Progression around constant topic

- old-**A** or **topic sentence**
- old-**A** → new **B**
- old-**A** → new **C** and **D**
- old-**A** → new **E** (not shown)
- old-**A** → etc.

"During the last decades, safe and effective live-attenuated **varicella vaccines** have been developed. The **vaccines** are used in **childhood immunization programs in many countries** [1]. All of the currently available **varicella vaccines** derive from a Japanese varicella-zoster virus (VZV) **wild-type strain** isolated from a child with typical varicella **named Oka** (parental **Oka**, pOka)."

Sauerbrei A, et al. Immune response of varicella vaccinees to different varicella-zoster virus genotypes. Vaccine 2011;29:3873-3877.

Acknowledgment : Robert M. Jacobson, Mayo Clinic, "Writing a First Draft" 31

Writing for Flow – 8
2. Progression by chaining

- old-**A** → new-**B**
- old-**B** → new-**C**
- old-**C** → new-**D**
- old-**D** → new-…

The **protein** when it is first made exists in an extraordinarily large variety of shapes, resembling those accessible to a flexible **strand** of spaghetti. The Brownian motion of the protein **strand** will carry it willy-nilly between various **shapes**, somehow finally getting it to settle down into a much less diverse family of **shapes**, which we will call the **native structure** of the **protein**. The average **native structures** …

Acknowledgment : Robert M. Jacobson, Mayo Clinic, "Writing a First Draft" 32

Writing for Flow – 9
3a. Progression by sub-categorization

- old-**A** → new **B**+**C**
- old-**C** → new **D**+**E**
- old-**C** → new **G**+**H**
- old-**B** → new **I**+**J**

The **objective** was to determine the **safety, adverse event profile**, and **immunogenicity** of one injection and two injections of the XRX-001 vaccine at two dose levels. The coprimary **immunogenicity outcomes** were the **proportion of subjects with seroconversion** and the **geometric mean titer of neutralizing antibodies**. Secondary **outcomes** were the **distribution of titers** and **duration of antibody response**. **Safety** was assessed on the basis of **local and systemic reactions** and **clinical laboratory abnormalities**.

Monath TP, et al. An Inactivated Cell-Culture Vaccine against Yellow Fever. N Engl J Med 2011;364:1326-1333

Acknowledgment : Robert M. Jacobson, Mayo Clinic, "Writing a First Draft" 33

Writing for Flow – 10
3b. Progression by sub-categorization

- old-**A** → new **B**
- old-**A** → new **C**+**D**
- old-**C** → new **E**
- old-**D** → new **F**+(old **A**)

A live attenuated **vaccine (17D)** developed in 1936 is widely used, with approximately **20 million doses** distributed annually. Although remarkably immunogenic, the **17D vaccine** may cause serious **viscerotropic** and **neurotropic** adverse events and anaphylaxis. **Viscerotropic disease** is a fulminant 17D virus **infection of the liver and visceral organs** resembling naturally acquired yellow fever. **Neurotropic disease** typically follows **invasion of the brain** by the replicating **vaccine virus**.

Monath TP, et al. An Inactivated Cell-Culture Vaccine against Yellow Fever. N Engl J Med 2011;364:1326-1333

Acknowledgment : Robert M. Jacobson, Mayo Clinic, "Writing a First Draft" 34

Writing for Flow - 11
4. Progression through time or order

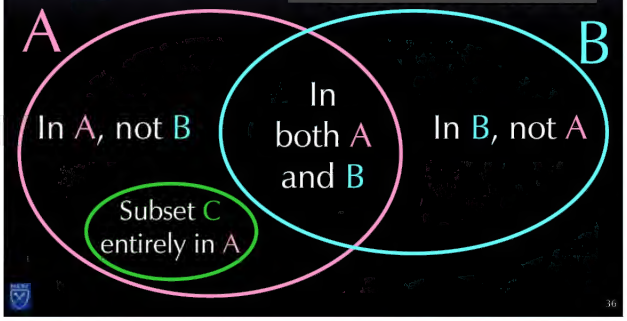
- Ordered by chronological or logical steps
  - "First, …"
  - "Second, …"
  - "Third, …"
  - "Fourth, …" "Fifth, …"

In **step one** of the survey, we listed all villages in the province. The **second step** required listing each of their estimated populations from the 2000 census.[23] Using a random-number generator, in **step three** we selected a total of 20 villages, for whom cluster sampling was performed in **step four** by trained field teams. **Step five** involved assay of specimens and analysis of the data.

35

Writing for Flow - 13
5a. Progression by shrinking Venn diagrams

Background: Venn diagrams illustrate overlaps and subsets of populations



36

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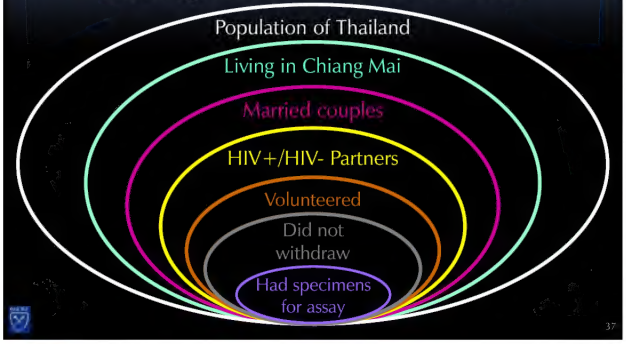
Writing for Flow - 14
5b. Progression by Venn diagram

- Shrinking subsets reflected in flow chart



37

Writing for Flow - 15
5c. Progression by Venn diagrams

- Population A → shrinks into subset B
- Subset B → shrinks into subset C
- Subset C → shrinks into subset D
- Subset D → shrinks into subset E
- Subset E → shrinks into subset F

We invited all **127 married HIV-discordant couples attending the university's HIV clinic** to view the explanatory video about the study, and **106 (83%) did so**. Of **these**, **101 (95%) were willing to listen** to verbal explanation of the consent form. Of **these**, **57 (56%) volunteered** and after signing the consent form were enrolled and vaccinated. Of **these**, 6 couples (11%) withdrew their consent before followup serum could be collected. For another 3 (5%), insufficient serum was collected, leaving **48 specimens available** for assay and analysis.

38

Writing for Flow - 16
Define abbreviations and use consistently

- Always define abbreviations, even common ones (exception: common ones in the Title)
  - "Human immunodeficiency virus (HIV)"
  - "Deoxyribonucleic acid (DNA)"
- Define abbreviations at first use in (1) abstract, (2) again in text, and (3) and again in each table/figure (or by footnote referral)
  - Then use abbreviation at remaining mentions
  - When definitions extensive, define in footnote in first table or first figure
    - Later table(s)/figure(s) refer readers back to prior one for definitions

39

Writing for Flow - 17
Use descriptive labels for study groups

- Avoid generic labels
  - Not "~~Group A~~", "~~Group B~~", "~~Group C~~"
  - Forces forgetful, busy readers back again to reread Methods
- Use names intuitive for group identity
  - "**0.1mL ID**", "**0.1mL IM**", "**0.5mL IM**"
  - "**5-yr Boost**", "**10-yr Boost**", "**15-yr Boost**"
  - "**anti-rAlp3/1:2000**", "**anti-rAlp3/1:10000**", "**anti-rBCPΔIgA/1:2000**"
    - = "recombinant Group B Streptococcus alpha-like protein 3"

40

Writing for Flow - 18
Avoid or minimize jargon

- Informal, short-hand, technical terms and abbreviations
- Used in a workplace or narrow field
- Often unknown by many outside the field
- Sometimes have general meaning understood differently by general population
- Examples
  - "Internalizing and externalizing scales"
  - "iPrEx participants"
  - "Neuts"
  - "Open-label"

41

Writing for Flow - 19
Keep subject and verb near each other

- Original – subject and verb 20 words apart
  - "The smallest of the URFs (URFA6L), a 207-nucleotide (nt) reading frame overlapping out of phase the NH2-terminal portion of the adenosinetriphosphatase (ATPase) subunit 6 gene has been identified as the animal equivalent of the recently discovered yeast H+- ATPase subunit 8 gene."
- Revise by moving interrupting content
  - "The smallest of the URFs is URFA6L, a 207-nucleotide (nt) reading frame overlapping out of phase the NH2-terminal portion of the adenosinetriphosphatase (ATPase) subunit 6 gene: it has been identified as the animal equivalent of the recently discovered yeast H+-ATPase subunit 8 gene."

CREDIT: Thompson Writing Program, Duke University

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Writing for Flow - 20
Seek both technical review and editing assistance before submission.

- Many submissions are surprising
  - Lack simple editing for grammar, spelling, style
  - Lack technical review by knowledgeable experts
- Share your drafts with colleagues, supervisors, others in same institution and elsewhere
  - Request critical comments and candid feedback
- For non-native-English speakers, get help by a native speaker
  - Ideally someone familiar with science
  - Commercial, internet services available for a fee

43

Writing for Flow - 21
Proofread. Proofread. Proofread.

- Simple mistakes ...
  - Arithmetic
    - E.g., numerators and denominators do not add up
    - Percentage calculations wrong
  - Formulas
    - E.g., ">" instead of "<" or vice versa
  - Spelling
  - References
    - Wrong order or missing authors, incorrect title, year, issue, pages
- Mistakes raise doubts in reviewers minds
  - Scientific quality of underlying research?
  - Sloppy implementation of study?
  - Flawed analysis?
- Cannot always judge research-process quality from the paper; reviewers use intuition
  - Mistakes may undermine credibility, leading to rejection

44

OUTLINE – *Tips to Publish Your Manuscript*

Part I (18 April 2024)
- ✓ Do Good Science
- ✓ Select and Follow Structure
- ✓ Create an Outline
- ✓ Adhere to Journal Instructions
- ✓ Tables that Explain Fully

Part II (25 April 2024)
- ✓ Figures that Explain Fully
- ✓ Compose Text for Logical Flow
- 8. Write Abstract Last !
- 9. Be Honest, Show Integrity
- 10. Ease Reviewers' Burden

45

Write Abstract Last !
Compose Abstract last, not first

- Only after
  - Finishing the Discussion ...
  - ... which was based on evidence in Results
  - ... which was produced by Methods
  - ... which was envisioned by Introduction
  - ... do you really know for sure the essence of your paper that the Abstract should reflect

46

Write Abstract Last ! - 2
Provides thumbnail sketch of paper

- Nothing more ...
  - No content in abstract not also in paper
- Nothing less ...
  - Every section of paper merits at least a word, phrase, or sentence in the Abstract

47

Write Abstract Last ! - 3
Service to readers

- Give specific, hard numbers and facts
  - Abstract may be all they have time to read
  - Abstract is available free to all on PubMED
    - Full paper may be behind a pay wall
- If interested or not from abstract's details, they decide or not to read the full paper
- Do not "advertise" or "tease" what the paper will say. Say it in the abstract!

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Write Abstract Last ! - 4

- Excellent Abstract
  - Each section of paper represented, in order
  - Has specific quantitative data!

Intro.
Meth.
Res.
Disc.

ABSTRACT

A complete economic study was carried out to assess the economical impact of two rotavirus vaccine in Colombia. A Markov decision model was built to assess the health outcomes from birth to 24 months of age for three hypothetical cohorts: one unvaccinated, one vaccinated with 2 doses of Rotarix™ and the third, with 3 doses of Rotateq™. Without vaccination, the annual number of medical visits by diarrhea in children under 2 years would be 1,293,159 cases, with 105,378 medical visits and 470 deaths (IC95% 295–560) related to rotavirus. Without vaccination, rotavirus disease would cost around USD$8 millions including direct and indirect costs. Assuming a cost per dose of USD$7.5, average cost-effectiveness ratio would be USD$663/DALY with Rotarix and USD$1391 with Rotateq. When price per dose falls below USD$7 both vaccines yield a similar average cost-effectiveness ratio (USD$1063/DALY). Incremental cost-effectiveness ratio of Rotateq versus Rotarix was USD$7787/DALY. Cost-effectiveness ratio was influenced mainly by vaccine cost and cost per case hospitalized. Other programmatic aspects such as number of doses to be applied, likelihood of completing vaccination schedule with shorter versus longer schedules, and storage space within the chain cold should be considered to make decisions on which vaccine should be introduced. In conclusion, vaccinating against rotavirus in Colombia with either vaccine would be very cost effective. If cost per vaccinated children falls below USD$3 per dose vaccination would be cost saving.

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Vaccine 2010;28:3856-3864

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Write Abstract Last ! - 5

- Poor Abstract
- Economic model of HPV vaccine usage

Abstract

Vaccine 2006;24/S3:S178-186

The impact of human papillomavirus (HPV)-16/18 vaccination on the incidence of infection and disease can be explored in a range of different models. Here we explore the epidemiological and economic impact of vaccination where screening is absent and where it is well established. The importance for epidemiology of assumptions about naturally-acquired immunity and heterogeneity in risk behaviours are highlighted, as are the importance for health economic outcomes of vaccine costs and the ability to modify screening strategies. To date, model results are consistent in predicting a useful role for vaccine, but further epidemiological data are required to help test the validity of models.

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- Cannot discern words/phrases/sentences conveying content of each section of paper
  - States no methods!
    - What "different models" were explored?
  - Provides no data or results!
    - What assumptions are to be "highlighted"?
    - No "model results" for "predicting a useful role"

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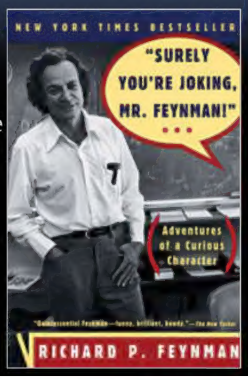
51

Honesty & Integrity
Feynman principles

- Richard P. Feynman
  - 1918 - 1988
- Theoretical physicist
  - 1965 Nobel Prize Laureate
  - WWII: worked at Los Alamos on atomic bomb
- Taught at Wisconsin, Princeton, Cornell, Cal Tech
- Several popular books for lay readers



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Honesty & Integrity - 2
Utter honesty and integrity

- "Cargo Cult" Science
  - Famous speech at California Institute of Technology, 1974
  - Critiques work looking like science, but without its substance

Cargo Cult Science

by RICHARD P. FEYNMAN

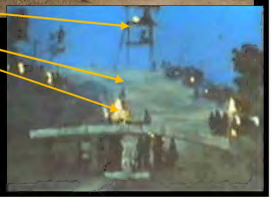
Some remarks on science, pseudoscience, and learning how to not fool yourself. Caltech's 1974 commencement address.

http://calteches.library.caltech.edu/51/02/CargoCult.pdf

53

Honesty & Integrity - 3
Digression to anthropology

- "Cargo Cult" societies
  - In World War II, the Allies built air bases in Melanesian islands and New Guinea where remote tribes lived
  - The tribes valued the tools and other "cargo" given to them by the military
  - After the war, the villages tried to bring back the cargo they missed so much
  - To attract airplanes and their cargo, they recreated their wartime experience:
    - Wooden "airplanes"
    - Bamboo traffic-control "towers"
    - Cleared jungle for "runways"
    - Fires alongside for "landing lights"
    - Wooden-stick "antennas"
    - "Controller" dummies with coconut-shell earphones
- Alas, as Feynman said:
  - *… they wait for the airplanes to land. They're doing everything right. The form is perfect. It looks exactly the way it looked before. But it doesn't work. No airplanes land.*
- In referring to "Cargo Cult Scientists":
  - *… they follow all the apparent precepts and forms of scientific investigation, but they're missing something essential …*



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Honesty & Integrity - 4
Utter honesty and integrity

"But there is one feature I notice that is generally ***missing in Cargo Cult Science****. That is the idea that we all hope you have learned in studying science in school -- we never explicitly say what this is -- but just hope that you catch on by all the examples of scientific investigation. [...]*

"It's a kind of ***scientific integrity****, a principle of scientific thought that corresponds to a kind of* ***utter honesty*** *-- a kind of leaning over backwards.*

"For example, if you're doing an experiment, ***you should report everything that you think might make it invalid*** *-- not only what you think is right about it:* ***other causes that could possibly explain your results****; and things you thought of that you've eliminated by some other experiment, and how they worked -- to make sure the other fellow can tell they have been eliminated.*

*"****Details that could throw doubt on your interpretation must be given****, if you know them.*

"You must do the best you can -- if you know anything at all wrong, or possibly wrong -- to explain it. If you make a theory, for example, and advertise it, or put it out, then ***you must also put down all the facts that disagree with it****, as well as those that agree with it."*

55

Honesty & Integrity - 5
Avoid offences in scientific publishing

- ***Plagiarism*** = Using another's words and claiming them as one's own
  - Easy to discover by Googling (not anymore with A.I.)
- ***Falsification*** = Providing fake or fictional data
- ***Duplicate submission*** = Sending the same work to a second publisher before the first has declined it
- ***Redundant Publication*** (AKA "salami slicing")= Submitting the same body of work to multiple journals with only minor differences, including reordering co-authors
  - Exception: Non-English papers translated into English when approved in advance by both journals, with clear description of the source in second publication
- Offenders subject to banishment from journal(s)
  - No excuses such as "not an issue in my country"

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Ease Reviewers' Burden
Sympathize with their task

Harper's Magazine, May 2011

[Critiques]
JEER REVIEW

From comments appended to manuscripts under consideration by reviewers for the journal Environmental Microbiology. *The journal publishes a selection of reviewer comments each year in its December issue.*

The biggest problem with this manuscript, which has nearly sucked the will to live out of me, is the terrible writing style.
More explanation is required; most readers will not know what "krigged" means.
The trees are crap, but, besides this, excellent work.
The Abstract describes results that I could not find in the Results section.
This is an interesting manuscript, not because of its results, but because of its complete ignorance of due scientific process.
"Hijacked" is a very dramatic word; maybe the bacteria are more polite with their biosynthesis.
I felt like I was teaching my grandmother to suck eggs. Accept with minor revision.
"Gentile" stream of nitrogen. It is not clear why this stream needs to be non-Jewish.
I like lipids, but they have their limitations, which appear to have been overlooked.
I recommend that this manuscript be rejected because I can't figure out what they did.
This was a possible candidate for the "worst use of statistics to substantiate a falsehood" award.
I'm not convinced that they know what they're talking about.
I nearly said reject, but then I recalled that I have a hangover and am feeling grumpy.
For the sake of time I have listed only a few (thirteen!) of the most glaring errors.
Alfachetoglutarate
The finding is not novel and the solution induces despair.

Ease Reviewers' Burden - 2
Minimize extra work to triage and review your manuscript.

- Reviewers usually volunteers
  - Accomplished, busy researchers, teachers
  - May be hurried, tired, distracted
  - Unconscious factors may be in effect
- Simplify their task
  - Label clearly lines, pages, figures, tables
  - Define clearly terms and abbreviations
  - Write for generalists, not specialists
    - Reviewer may not know your field's jargon

59

Ease Reviewers' Burden - 3
If journal invites nominees, name knowledgeable, unconflicted reviewers

- Editors have difficulty recruiting reviewers
  - Busy researchers, impatient for mediocre or worse manuscripts
  - Often dozen+ invitations required to secure minimum 2-to-3
- Avoid personal or institutional conflicts among nominees
  - This editor researched and rejected nominees:
    - From same institution as any manuscript co-authors
    - From any shared co-authorship of past publications
- To find reviewers, this editor used the Introduction's citations
  - Appeals to vanity of potential reviewers to see how one's work is cited:
    - *"Based on your published expertise in relevant subject matter, as cited in the manuscript below submitted to VACCINE, we would appreciate your peer review of it … ."*
- Good to nominate those knowledgeable in your paper's subject

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Ease Reviewers' Burden - 4

- Fonts type and size (if not journal specified)
  - Use a standard font built into Windows® or Apple Mac OS®
    - Unless journal specifies another font
  - May use different fonts to distinguish header or footer from main text
- Use legible font size
  - Times New Roman:
    - 12 point very legible
    - 11 point minimum
  - Arial
    - 12 point larger than necessary
    - 11 point very legible
    - 10 point minimum

61

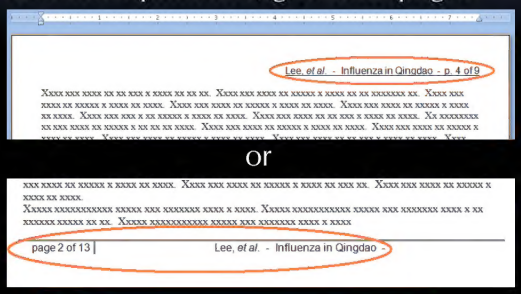
Ease Reviewers' Burden - 5

- Line spacing and margins
  - Leave space for reviewer notes in printout
    - 1.5-line spacing usually acceptable
      - Double-spacing, if required by journal
    - Minimum 1-inch (2.5-cm) margins
- Justification OFF!
  - All lines ***flush left***; right ends of paragraphs "ragged"
  - Justification masks erroneous double spaces between words

62

Ease Reviewers' Burden - 6

- Headers or footers help find places and assemble printouts; give total pages



or

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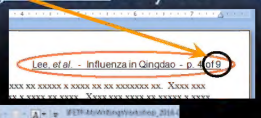
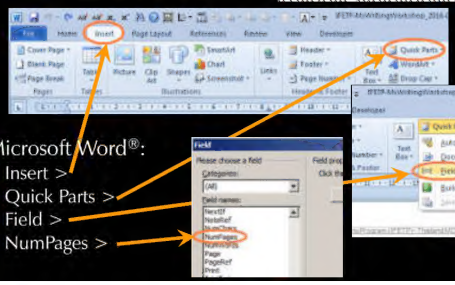
Ease Reviewers' Burden - 7

How to add total page count to your header or footer





- Microsoft Word®:
  - Insert >
  - Quick Parts >
  - Field >
  - NumPages >

64

Ease Reviewers' Burden - 8

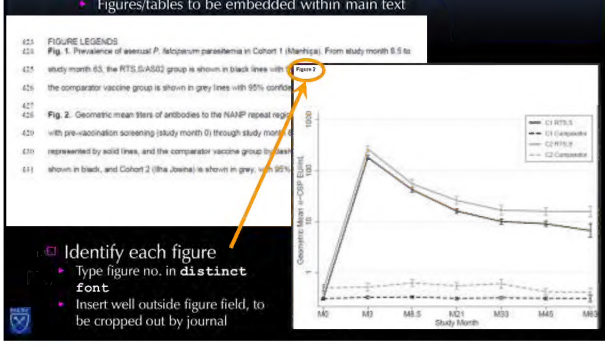
- Use continuous line numbering
  - Not restarting as line 1 on each new page
  - Avoids reviewers needing to specify page no., paragraph no., and sentence no.
    - For a word, phrase, or sentence upon which they wish to comment
  - In Word®, tab commands: Page Layout > Line Numbers > Continuous

207 reciprocal HI titre for the vaccine virus. The CHMP criteria are fulfilled in subjects
208 aged 18 to 60 years if the point estimate was >40% for SCR, >70% for SPR and >2.5
209 for GMFR. The same CHMP criteria were used for the paediatric studies presented
210 here. NOTE: right margin is not justified ("ragged") →
211 The primary safety analysis was based on the total vaccinated cohort (TVC) for
212 each age stratum and overall. The TVC included all vaccinated subjects with at least
213 one vaccine dose documented. The incidence of solicited local and general symptoms

65

Ease Reviewer's [and publisher's] Burden - 9

- Common mistakes
  - Most journals do **not** want:
    - Figure titles/legends to be on same page as figures
    - Figures/tables to be embedded within main text



- Identify each figure
  - Type figure no. in **distinct font**
  - Insert well outside figure field, to be cropped out by journal

66

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Ease Reviewers' Burden - 10
Handling rejection

- Not always a negative judgment
  - Some journals maintain focus on narrow subject
    - Your paper may be outside that scope
- Your paper may be duplicative
  - 10th paper reporting a finding adds little to first 9
- If rejection based on poor quality
  - Take advantage of reviewers' criticisms to fix paper
  - Then submit improved version elsewhere

67

Ease Reviewers' Burden - 11
Extraneous factors affecting peer-review

- Time of day, hunger, bad night's sleep, low brain/blood glucose, family problems, etc.
- "Decision fatigue"
  - *E.g., decisions to parole vs. keep prisoner in jail*
    - Parole denials more likely later in session or day, after mental energy depleted before lunch or adjournment
    - See Sunday *N.Y. Times Magazine*, 2011-08-21
      http://www.nytimes.com/2011/08/21/magazine/do-you-suffer-from-decision-fatigue.html?pagewanted=all

68

Ease Reviewer's Burden - 12
If invited to revise the submission …

- Celebrate !
- Ensure the revised manuscript and its accompanying cover letter simplify the burden of reviewing your revision

69

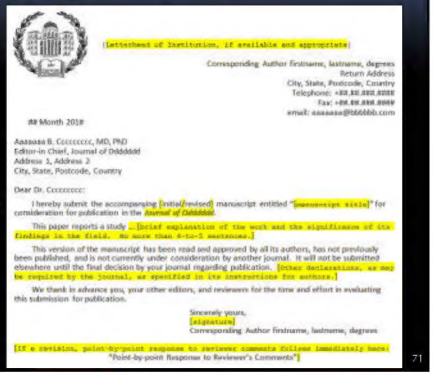
Ease Reviewer's Burden - 13
In *cover letter*, respond in detail

- Copy into cover letter ***all*** comments word-for-word of reviewers/editor
  - Even praise and general information not specific to your manuscript
  - Saves reviewers' and editor's time looking up past comments forgotten from months ago
- Explain point-by-point how paper changed (or not) in response to **each-and-every** comment or criticism
  - Use indenting, font, and color to distinguish your words from theirs
  - If reviewer/editor asks question, answer in both cover letter and in manuscript
    - Ensure readers of your future publication do not have the same question
  - Quote in cover letter your changed sentence or item
    - Saves time opening up your manuscript to confirm the change(s) you reported
    - Provide line number(s) in revision where reviewer/editor can verify the changes
  - If disagreeing with reviewer, provide a polite rebuttal, and insert in manuscript language and citations supporting for your reasons
- In the revised manuscript:
  - Highlight the changed items with red font and/or yellow highlight
    - Avoid italics, boldfacing, underlining to avoid accidental publication

70

Ease Reviewer's Burden - 14
Sample cover letter page 1

- For either
  - Original submission
  - Re-submitted revision
- For revisions:
  - Pages 2 and beyond include:
    - All prior comments of reviewers and editor,
    - Plus your intercalated responses
    - Plus verbatim copies of your changes in the revision


(Letterhead of Institution, if available and appropriate)

Corresponding Author firstname, lastname, degrees
Return Address
City, State, Postcode, Country
Telephone: +00.000.000.0000
Fax: +00.000.000.0000
email: aaaaaaa@bbbbbb.com

Month 2018

Aaaaaaa B. Ccccccccc, MD, PhD
Editor-in Chief, Journal of Ddddddd
Address 1, Address 2
City, State, Postcode, Country

Dear Dr. Ccccccccc:

I hereby submit the accompanying [initial/revised] manuscript entitled "[manuscript title]" for consideration for publication in the *Journal of Ddddddd*.

This paper reports a study … [brief explanation of the work and the significance of its findings in the field. No more than 4-to-5 sentences.]

This version of the manuscript has been read and approved by all its authors, has not previously been published, and is not currently under consideration by another journal. It will not be submitted elsewhere until the final decision by your journal regarding publication. [Other declarations, as may be required by the journal, as specified in its instructions for authors.]

We thank in advance you, your other editors, and reviewers for the time and effort in evaluating this submission for publication.

Sincerely yours,
[signature]
Corresponding Author firstname, lastname, degrees

[If a revision, point-by-point responses to reviewer comments follows immediately here: "Point-by-point Response to Reviewer's Comments"]

71

Ease Reviewer's Burden - 15
Suggested revision cover-letter format

Reviewer comment flush left, **Courier font**

```
Reviewer #3:

Line 271: States "pneumonia hospitalization rates were increasing prior to
2010".  But this is not substantiated by figure 1, since the pneumonia
rates fluctuated widely between 2007, 2008, and 2009.
```

Author response indented in different font (Arial) and color (red)

As the reviewer has pointed out and suggested, we changed the word "increasing" to "fluctuating" in **lines 322-323** of this revision, which now reads as follows:

Indent twice in Revision font (e.g., Times Roman) to show actual revised sentence to save reviewer time opening separate file and scrolling to verify change.

"Childhood pneumonia hospitalization rates were fluctuating prior to 2010 and decreased significantly in the two years after PhiD-CV introduction."

320 seasonality and secular-trend (p<0.001). On the other hand, non-respiratory admission rates
321 remained stable comparing both periods (p=0.39).
322 Childhood pneumonia hospitalization rates were fluctuating prior to 2010 and
323 decreased significantly in the two years after PHiD-CV introduction. Conversely, rate of non-
324 respiratory admissions has shown no decrease. These data are an evidence of the effectiveness

In actual revision, use yellow highlight to show revisions. Do **not** use boldface, underline, or italics, which may inadvertently get into print.

72

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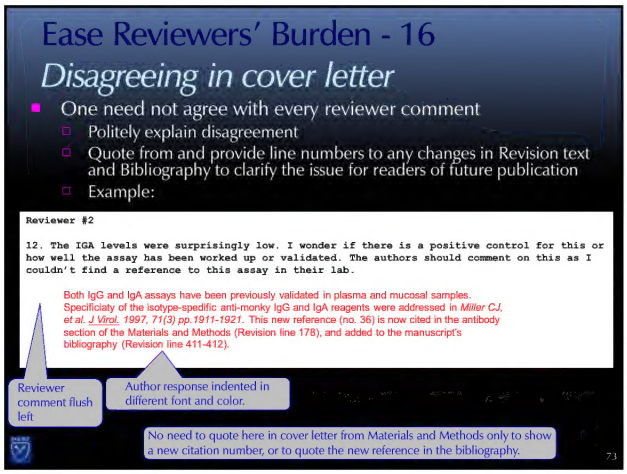
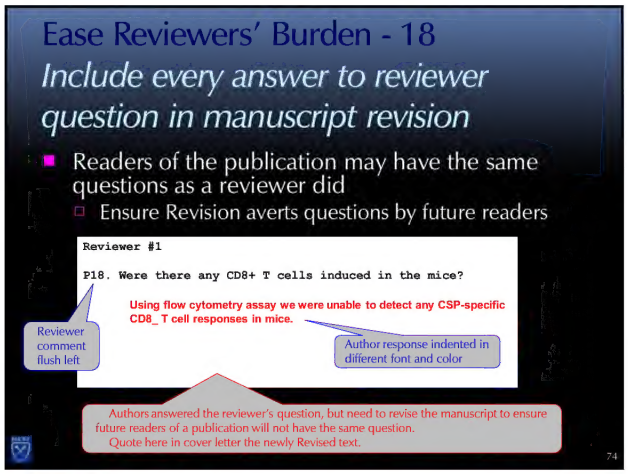
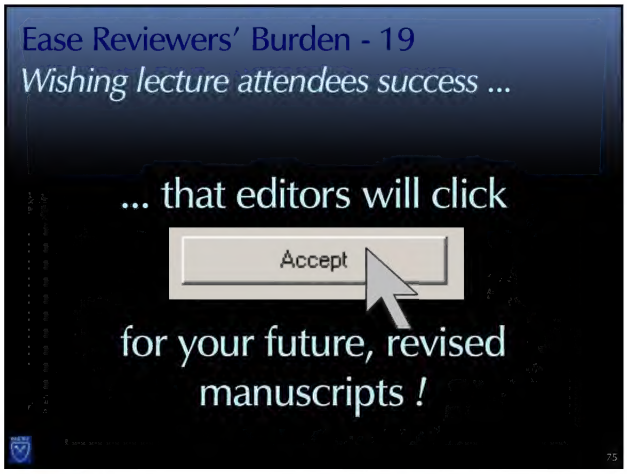
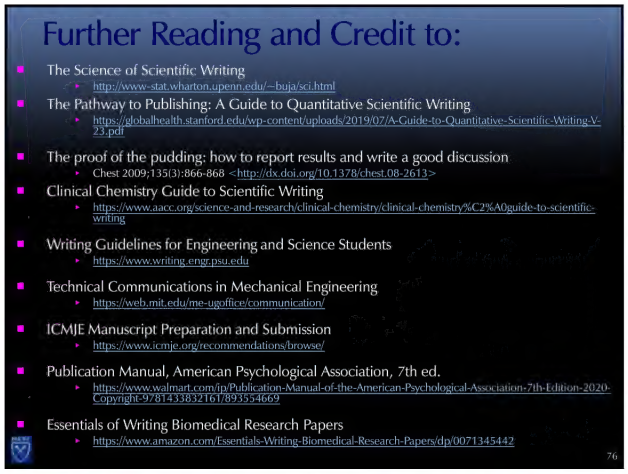

Ease Reviewers' Burden - 16
Disagreeing in cover letter
One need not agree with every reviewer comment
Politely explain disagreement
Quote from and provide line numbers to any changes in Revision text and Bibliography to clarify the issue for readers of future publication
Example:
Reviewer #2
12. The IGA levels were surprisingly low. I wonder if there is a positive control for this or how well the assay has been worked up or validated. The authors should comment on this as I couldn't find a reference to this assay in their lab.
Both IgG and IgA assays have been previously validated in plasma and mucosal samples. Specificaty of the isotype-spedific anti-monky IgG and IgA reagents were addressed in Miller CJ, et al. J Virol. 1997, 71(3) pp.1911-1921. This new reference (no. 36) is now cited in the antibody section of the Materials and Methods (Revision line 178), and added to the manuscript's bibliography (Revision line 411-412).
Reviewer comment flush left
Author response indented in different font and color.
No need to quote here in cover letter from Materials and Methods only to show a new citation number, or to quote the new reference in the bibliography.
73


Ease Reviewers' Burden - 18
Include every answer to reviewer question in manuscript revision
Readers of the publication may have the same questions as a reviewer did
Ensure Revision averts questions by future readers
Reviewer #1
P18. Were there any CD8+ T cells induced in the mice?
Using flow cytometry assay we were unable to detect any CSP-specific CD8_ T cell responses in mice.
Reviewer comment flush left
Author response indented in different font and color
Authors answered the reviewer's question, but need to revise the manuscript to ensure future readers of a publication will not have the same question.
Quote here in cover letter the newly Revised text.
74




Further Reading and Credit to:
The Science of Scientific Writing
http://www-stat.wharton.upenn.edu/~buja/sci.html
The Pathway to Publishing: A Guide to Quantitative Scientific Writing
https://globalhealth.stanford.edu/wp-content/uploads/2019/07/A-Guide-to-Quantitative-Scientific-Writing-V-23.pdf
The proof of the pudding: how to report results and write a good discussion
Chest 2009;135(3):866-868 <http://dx.doi.org/10.1378/chest.08-2613>
Clinical Chemistry Guide to Scientific Writing
https://www.aacc.org/science-and-research/clinical-chemistry/clinical-chemistry%C2%A0guide-to-scientific-writing
Writing Guidelines for Engineering and Science Students
https://www.writing.engr.psu.edu
Technical Communications in Mechanical Engineering
https://web.mit.edu/me-ugoffice/communication/
ICMJE Manuscript Preparation and Submission
https://www.icmje.org/recommendations/browse/
Publication Manual, American Psychological Association, 7th ed.
https://www.walmart.com/ip/Publication-Manual-of-the-American-Psychological-Association-7th-Edition-2020-Copyright-9781433832161/893554669
Essentials of Writing Biomedical Research Papers
https://www.amazon.com/Essentials-Writing-Biomedical-Research-Papers/dp/0071345442
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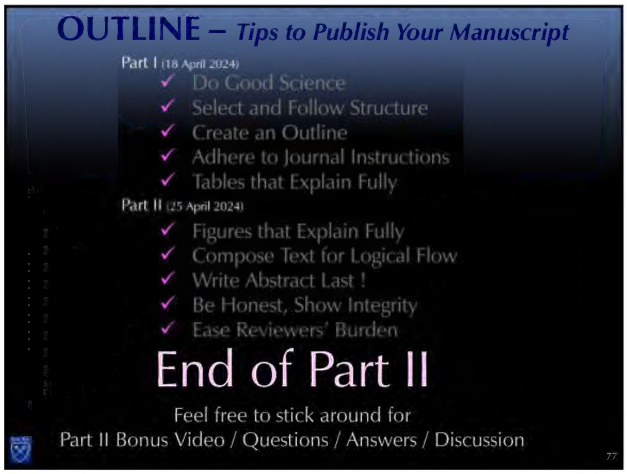
OUTLINE – Tips to Publish Your Manuscript
Part I (18 April 2024)
Do Good Science
Select and Follow Structure
Create an Outline
Adhere to Journal Instructions
Tables that Explain Fully
Part II (25 April 2024)
Figures that Explain Fully
Compose Text for Logical Flow
Write Abstract Last !
Be Honest, Show Integrity
Ease Reviewers' Burden
End of Part II
Feel free to stick around for
Part II Bonus Video / Questions / Answers / Discussion
77

Tips from the Other Side of the Peer-Review Process to Get Your Scientific Manuscript Published
Post-lecture II
Bonus Video / Questions / Answers / Discussion
Bruce G. Weniger, MD, MPH, Adjunct Associate Professor,
Hubert Department of Global Health, Rollins School of Public Health (RSPH),
Emory University
Center for Faculty Development and Excellence (CFDE), Emory University
Atlanta, Georgia USA (Claudia Nance Rollins Bldg room CNR-5001)
Thursdays at noon, 18 April 2024 (Part I), 25 April 2024 (Part II)
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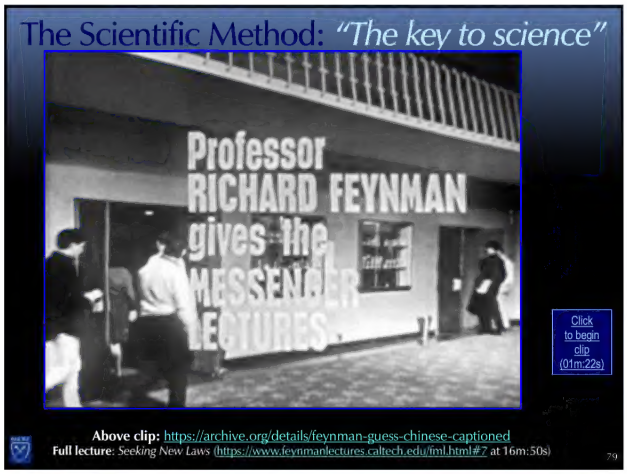

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